

CARIBBEAN NATIONAL FOREST

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ATLANTA, GEORGIA



MF-18 R.R.

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1936



FOREWORD



PUERTO RICO UNDER TWO FLAGS

Old Glory has waved over Puerto Rico, where Uncle Sam's only tropical national forest is located, for nearly 40 years, but the island retains innumerable reminders of its four centuries under the Spanish flag that began with discovery by Columbus on his second voyage to the New World in 1493.

This colorful historic background, the tropical location of the island, its picturesque agricultural pursuits, the Spanish-speaking population, and the wonderful climate appeal strongly to those who like to travel. The combination of mountain and coastal scenery has the customary charm of the unusual. The Cordillera Central with many peaks in the 4,000-foot class traverses the island from east to west. On one side lie the blue waters of the Caribbean Sea; on the other, those of the restless Atlantic.

Puerto Rico, smallest of the Greater Antilles, is 110 miles long and 35 miles wide, an island empire

PUERTO RICO BAJO DOS BANDERAS

Desde hace casi cuarenta años la bandera estrellada ya se tremola sobre Puerto Rico, región de nuestro único bosque nacional y tropical; pero la isla todavía tiene innumerables recuerdos de los cuatro siglos pasados bajo la bandera española, iniciados por su descubrimiento por Cristóbal Colón, a la sazón de su segundo viaje al Nuevo Mundo, hecho en 1493.

Aquel fondo histórico muy pintoresco, la situación tropical de la isla, sus costumbres agrarias extremadamente interesantes, su población de habla española y su clima maravilloso, todo esto impresiona profundamente a los viajeros. La combinación de paisajes montañosos y costales tiene el encanto de lo raro, insólito. La Cordillera Central, con la muchedumbre de sus cumbres más de cuatro mil pies de alto, atraviesa la isla del este al oeste. A un lado se ven las aguas azules de la Mar de las Antillas; al otro se extiende el inmenso Atlántico.

not quite as large as the State of Connecticut. The mountains are high enough to be almost continually in dense masses of rain clouds. The hot tropical sun sucks up vast quantities of water from the surrounding sea and ocean. It condenses, and the beautiful thick clouds are turned into sharp showers that sweep down the mountains, drenching the jungles and filling the streams with clear, roaring water. The watershed lies nearer the south shore than the north, and two-thirds of the drainage goes into the Atlantic and one-third into the Caribbean Sea.

Rainfall statistics are astonishing to the average American. At lower elevations on the northern side of the island, rainfall varies from 60 to 80 inches a year, and this increases with elevation until in the higher mountains it becomes as great as 150 inches. The southwestern portion of the island presents a sharp contrast. Here it is relatively dry, some portions having only 20 inches of rainfall a year because the moisture has been taken from the clouds as they crossed the mountains. The average daily maximum temperature in the mountains during the summer months is from 10° to 15° less than at San Juan, where the mean temperature is 78° F., with an average humidity of 78 percent. There is usually a daily breeze which offsets the effect of the tropical sun and makes Puerto Rico pleasant, even in

Puerto Rico, la menor de las Grandes Antillas, tiene 110 millas de largo y 35 millas de ancho; quiere decir que es un poco más pequeño que el Estado de Connecticut. Las montañas son bastante altas para estar casi de continuo cubiertas de densas masas de nubes. El ardor del sol tropical evapora grandes cantidades de agua de la mar que circunda la isla. Se condensa pues el vapor, y las imponentes nubes negras sueltan chaparrones que se arrojan con impetu en las valles, sumergiendo los espesos bosques y transformando los arroyos en torrentes salvajes y claros. La divisoria de las vertientes de agua está más cerca de la costa norte que de la sur, y los dos tercios de las aguas descienden al Atlántico, no más de un tercio echándose en la Mar de las Antillas.

La precipitación extremadamente grande es un poco desconcertante por la mayoría de los norte-americanos. En las elevaciones bajas de la parte septentrional de la isla la precipitación fluctúa entre 60 y 80 pulgadas al año; en altitudes mayores esta cifra crece hasta alcanzar 150 pulgadas en las altas montañas. Contrastá con eso la región del suroeste, distinguida por un clima relativamente árido, siendo la precipitación de ciertos lugares no más de 20 pulgadas anuales. Ello es que, teniendo que ascender, las nubes se vacían forzadamente antes de atravesar la sierra. En las montañas el máximo medio de la temperatura

summer. A flat, rich coastal plain of varying width almost completely encircles the island. Here most of the sugar and citrus fruits are grown. Coffee, which is grown under a nurse crop of forest trees, tobacco, and vegetables are confined chiefly to the uplands. The tobacco here rivals that of Cuba for the manufacture of fine cigars. Grapefruit and pineapples are among the leading crops. The island produces about 1,000,000 tons of sugar. The great factories, or "centrals", are well worth a visit during the harvest season from January to June.

Puerto Rico's history is closely linked with that of the United States through discovery by Christopher Columbus and colonization by Ponce de Leon. In November 1493, more than a century before Jamestown was settled, Columbus landed on the island, known to its Indian inhabitants as Borinquen, near the spot where the town of Aguada now stands. The great discoverer took possession of it for his royal Spanish patrons and gave it the name of "San Juan Bautista", to which was added later the qualification, "de Puerto Rico." He and his men then pushed on toward Santo Domingo, leaving the task of colonization to those who were to follow.

Nothing important happened until 1508, when Juan Ponce de Leon agreed with Nicholas de Ovando, Governor of Hispaniola, as Santo Domingo was then known, to explore the island of

estival es de 78 grados Fahrenheit, siendo la humedad media 78 por ciento. Hay por lo común una brisa cotidiana, moderando el ardor del sol tropical y dando a la isla un clima agradable aun en el estío. Una llanura costal fertilísima de anchura inigual encierra casi toda la isla. En esta llanura se produce la mayor parte del azúcar insular y de frutas aciduladas. El café, que crece bajo la protección de árboles forestales, el tabaco y las legumbres pertenecen propiamente a la región montañosa. Aquí encontramos cosechas de tabaco que rivalizan con las de Cuba en cuanto a la fabricación de cigarrillos de marca. El pomelo y las ananás son dos de las cosechas principales. La isla produce aproximadamente un millón de toneladas de azúcar. Las grandes factorías o "centrales" valen la pena de una visita en la sazón de la zafra, es decir, entre enero y junio.

La historia de Puerto Rico tiene muchos puntos de contacto con la de los Estados Unidos desde su descubrimiento por Cristóbal Colón y colonización por Ponce de León. Colón desembarcó en la isla (llamada entonces Borinquén en el idioma de los indígenas) en noviembre de 1493, es decir más de un siglo antes de la fundación de Jamestown. Desembarcó cerca del sitio del pueblo actual de Aguada y tomó posesión de la isla en nombre de los Reyes Católicos, llamándola "San Juan Bautista", nombre al cual se añadió pues "de

Borinquén. Ponce de León arrived in the Bay of Guánica. From this point he explored the coast by vessel, and left the ship at Boca Abana off Dorado. After examining the surrounding country, he established the town of Caparra, a few miles from the present city of San Juan. He remained at Caparra until March 3, 1512, when he sailed, under royal charter, on his first voyage in search of the Fountain of Youth.

When Ponce de León made his third and last voyage to Florida in 1520, he was wounded by the Seminoles in an attack on his forces as he landed. He died at Puerto Príncipe on the return voyage, and his body was brought to the Dominican Convent in San Juan, where it now lies. A statue was erected to him in 1882 on the Plaza of San José, cast from bronze cannon left by the British after the siege of 1797.

The Island of Puerto Rico, like many early Spanish colonies in the Caribbean, soon became the object of concerted attacks by the enemies of Spain as well as roving bands of pirates and freebooters. While France and Spain were at war in 1528, French privateers attacked the island, and it was after this invasion that the famous Fortaleza was erected at San Juan.

In 1595, Sir Francis Drake approached San Juan in quest of a rich deposit of gold and silver bullion, but he was repulsed after 3 days of bitter fighting. The Dutch attacked

Puerto Rico." Colón y su tripulación no se pararon en la isla, pero continuaron su viaje hacia Santo Domingo, dejando a otros la tarea de su colonización.

No ocurrió nada de importante hasta 1508, cuando D. Juan Ponce de León obtuvo el consentimiento de Nicolás de Ovando, Gobernador de la Española (nombre dado entonces a Santo Domingo) para explorar la isla de Borinquén. Llegó Ponce en la bahía de Guánica, costeando la isla desde aquel punto, desembarcó en Boca Abana, cerca de Dorado. Explorando que hubo las cercanías, fundó el pueblo de Caparra a unas millas del sitio de San Juan. Se quedó en Caparra hasta el 3 de marzo de 1512, cuando se embarcó otra vez, autorizado por privilegio real, en busca de "la Fontana de Eterna Juventud."

A la sazón de su tercero y último viaje a la Florida, en 1520, Ponce de León llevó una herida mortal cuando se defendía contra un ataque de los indios semíoles que trataban de impedir el desembarcamiento de los españoles. Murió en su viaje de vuelta, en Puerto Príncipe, siendo conducido su cuerpo a San Juan, donde aun reposa en el convento de los dominicanos. En 1882 se le erigió en la Plaza de San José una estatua fundida del bronce de ciertos cañones dejados por los ingleses después de su sitio de la ciudad en 1797.

Parecida a otras tantas colonias españolas establecidas en aquella

the town in 1625, but were put to rout after their leader, Hendrick Bowdoin, had been seriously wounded in a skirmish with a few hundred colonists who had garrisoned themselves in El Morro.

Harvey and Abercrombie, English privateers with 8,000 troops, made a final attempt to conquer the city in 1797, but they, too, were repulsed, leaving behind many dead and numerous prisoners. During the sixteenth and seventeenth centuries massive fortifications were constructed around the capital city, making it an almost impregnable stronghold.

The agricultural development of the island was not entirely dormant during these turbulent times. It was soon found that the climate and the soil were particularly favorable for tillage, and as early as 1515 sugar-cane was introduced from Santo Domingo and the cultivation of coffee soon followed.

The peace of the island was disturbed by the Spanish-American War. As a result of this conflict Spain ceded Puerto Rico to the United States and formal possession was assumed on October 18, 1898.

From the moment the peace treaty was concluded between the two nations, the destinies of beautiful Puerto Rico were entirely changed and this island, a Spanish colony since its discovery by Columbus in 1493, became "an insular possession" of the United States of America.

época en la Mar de las Antillas, la isla de Puerto Rico no tardó en hacerse el objeto de ataques concertados de parte de varios enemigos de España y de escuadras de piratas y corsarios. Durante la guerra entre España y Francia, en 1528, armadores franceses atacaron a la isla. Fue esta invasión el motivo de la erección de la célebre fortaleza de San Juan.

En 1595 sir Francisco Drake se acercó a San Juan en busca de un depósito riquísimo de oro y plata en barras, pero tres días de batalla encarnizada resultaron en su repulso. En 1625 los holandeses atacaron la ciudad, con éxito no más satisfactorio por ellos, dado que su jefe, Henrique Bowdoin, llevó una herida bastante grave en una riña con dos o tres centenas de colonos que se habían atrincherado en El Morro.

En 1797 Harvey y Abercrombie, armadores ingleses, hicieron un último esfuerzo para conquistar la ciudad con un ejército de 8,000 hombres. No tuvo otro éxito esta empresa sino la pérdida de muchos de sus hombres, muertos y prisioneros. Durante los siglos XVI y XVII fortificaciones muy poderosas se habían construidas alrededor de la capital, lo cual explica su inexpugnabilidad.

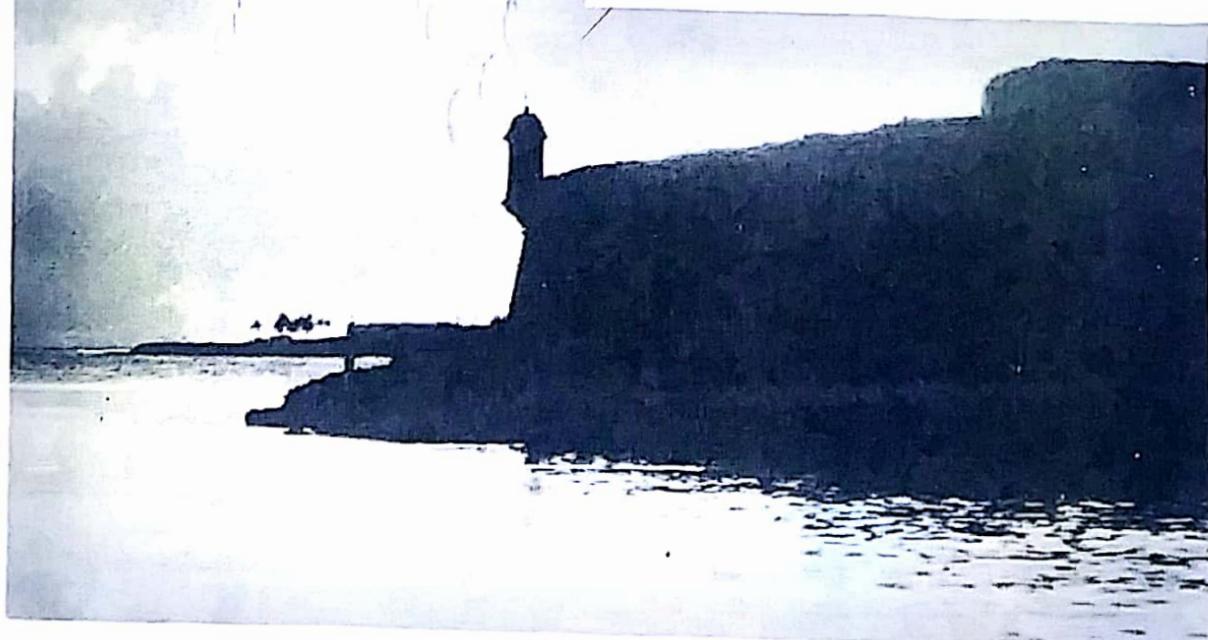
El desarrollo agrario de la isla se conseguía sin interrupción a pesar del carácter perturbado de los tiempos. No se tardó en notar que el clima y suelo de la isla favorizaban de singular modo su explotación agraria. En 1515 se introdujo de

Five years later President Theodore Roosevelt in recognition of the importance of forest conservation to this densely populated territory, established from the Crown lands ceded by Spain a national forest that forms the nucleus of what is now known as the Caribbean National Forest.



Santo Domingo la caña de azúcar, seguido pronto por la cultura del café.

La guerra hispano-americana disturbó la paz de la isla. Se sabe que, terminado aquel conflicto, España cedió Puerto Rico a los Estados Unidos, cuyo gobierno tomó posesión formal de la isla el 18 de octubre de 1898. Desde aquel momento el destino de Puerto Rico se cambió por completo, convirtiéndose esta posesión española, que había sido no más que una colonia desde su descubrimiento, en una "Posesión Insular" de los Estados Unidos. Cinco años después, Teodoro Roosevelt, Presidente de la República, sintiendo la inmensa importancia de la conservación de los bosques de un territorio con una población tan densa como Puerto Rico, reservó los terrenos del dominio real, cedidos por España, para el establecimiento de un bosque nacional, núcleo del "Caribbean National Forest".



El Morro where early colonists garrisoned themselves from marauders.

Caribbean National Forest
of Puerto Rico



A beautiful example of Spanish architecture.



CARIBBEAN NATIONAL FOREST

THE CARIBBEAN NATIONAL FOREST enjoys a unique place in the national forest system of the United States because the tropical tree species, which grow with amazing rapidity, are not just rare and interesting but exceedingly beautiful and useful. More than 300 species have been identified, and new ones are being added to the list constantly. Many of the species are found only in Puerto Rico and a number of these grow just in the national forest itself.

In the Luquillo Unit of the Caribbean Forest great trees spread their immense crowns hung with vines and lianas, and every trunk, crotch, or limb supports its fringe of jungle epiphytes, the little nonparasitical plants that are found everywhere. Tree leaves hold water and form natural aquariums for semiaquatic insects, tree toads, and other creatures. Beneath these forest giants is a tangled understory of smaller trees and shrubs, which, in turn, shade a bewildering mass of flowers, herbs, and mosses, and more than half a hundred varieties of graceful ferns. Shell-pink begonias turn the forest floor into fairyland. Some of the ferns are extremely small and others achieve a height of 30 feet. The fern banks cannot be adequately described. There are tiny delicate orchids growing on trees, rocks, and logs, and others producing large sprays of yellow flowers that resemble a swarm of butterflies. Occasionally pink ones are found growing on moss-covered trees.

The forest may be classified roughly into two types—rain and dwarf. Tree trunks throughout the rain forest are festooned with myriads of air plants, whose fiery scarlet spikes of blossom light up the cool green dimness. Especially beautiful among the vines are the *bejuco de San Juan*,

noted for its red flowers, *bejucos de palma*, characterized by clusters of orange flowers, and *aguaceta*, a small shrub which scents the air with fragrant white blossoms.

The dense dwarf-type forest found on the highest slopes of the mountains is unusual and interesting. Because of thin soil, excessive moisture,



Whip sawing a tabanca log in the Luquillo Unit.

and exposure to strong winds, the trees, many of which are perhaps a century old and not found anywhere else in the world, are often no taller than a man. Their trunks, and sometimes even the twigs, are hung with pendants of gray moss.

HOW THE FOREST WAS ESTABLISHED

The Caribbean National Forest came into existence through a Presidential proclamation dated June 4, 1935, when it was decided to purchase lands in the Cordillera Central, the main mountain range of the island as a new unit of the national forest which already existed in the Luquillos. The nucleus of the new forest, however, was the old Luquillo established in 1903, 5 years after the Spanish-American War, by a proclamation of President Theodore Roosevelt. This forest was created from lands formerly belonging to the Spanish Crown and ceded to the United States by the Treaty of Paris. No additions of any importance were made until

1934, when the National Forest Reservation Commission approved the establishment of the Toro Negro Unit in the Cordillera Central. In 1935 the name of the forest was officially changed from Luquillo to Caribbean. Up to the present time, little of the 35,000 acres of land suitable for inclusion in this unit has been actually purchased. Acquisition will be con-



The virgin forests have gone from the mountains of Puerto Rico.

tinued, however, as land is offered for sale at reasonable prices. At present purchases are being made in both the Luquillo and Toro Negro Units with the ultimate objective of approximately 65,000 acres for the forest.

INTENSIVE FORESTRY IMPORTANT TO PUERTO RICO

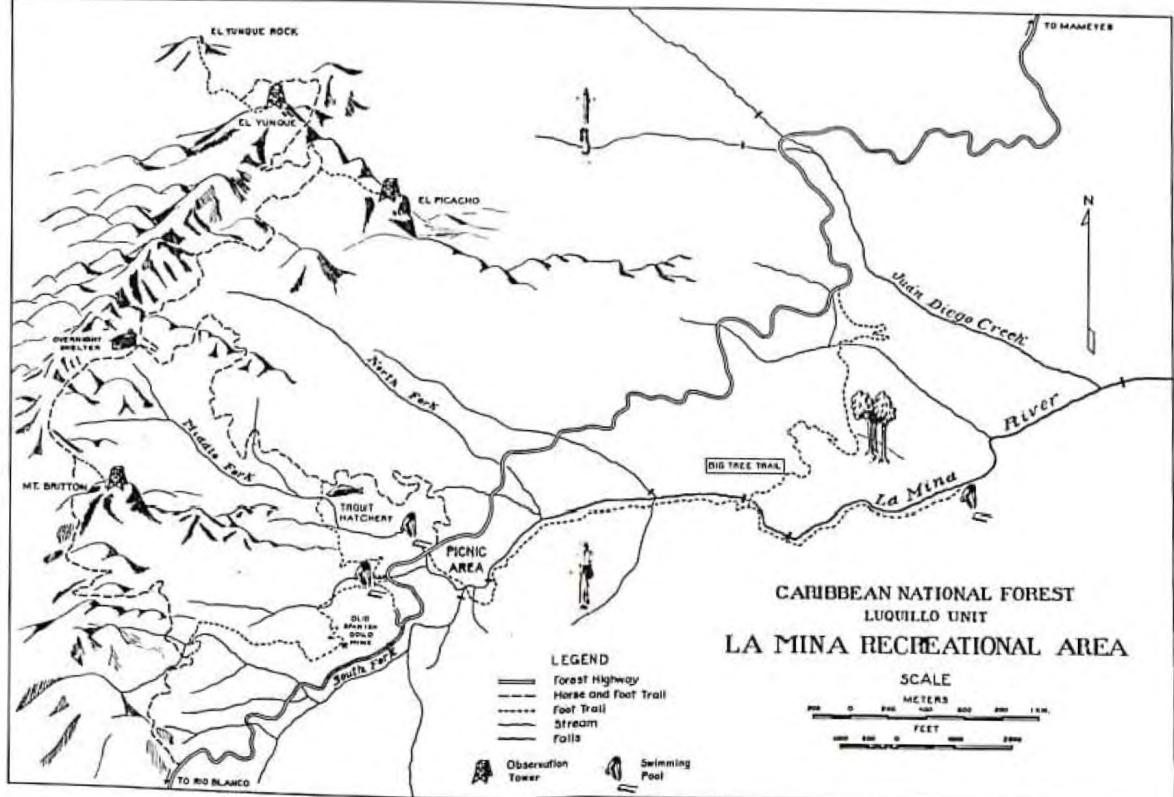
Intensive land use must be practiced in Puerto Rico if the island is to solve its economic and social problems. The population in 1930 was 1,543,913. The land surface of the island is 2,137,280 acres and there are only a few industries. Much of the land is very rich and has been highly developed for the production of sugar, coffee, tobacco, and citrus and other fruits. There is an area, however, estimated at 500,000 acres, or a fourth of the island, which is not suited to agriculture because of slope, poor soil, or other conditions. The demand for pasture and agricultural lands by a dense population that averages 460 people to a square mile has resulted in the clearing of much of the island. The forests have also been heavily cut for timber.

Three-fourths of all the virgin timber that remains in the Puerto Rican forests which once covered the entire island are included in the Caribbean National Forest. The primeval forests of Puerto Rico were stocked with timber, unequalled in quality by anything found in the West Indies. Today only a relatively few acres offer merchantable material. There is some new growth of timber trees, but for the most part the cut-over land has been taken over by worthless species and brush. With a decreasing timber supply, the demands for wood have increased until practically all the building lumber used in Puerto Rico today is imported.

Puerto Ricans require a tremendous amount of wood to make charcoal, the leading fuel for cooking. Neither coal nor oil is found on the island and electricity is available only in the larger towns and cities. Therefore, the greater part of the population must depend on charcoal, and the depletion of the forests is forcing the importation of wood for charcoal in increased quantities.

Puerto Rico's forests once supplied many valuable cabinet woods and at one time a furniture and cabinet making industry flourished, but with the passing of the forests the industry declined. Under normal economic conditions the importation of timber products amounts to \$5,500,000 per year. Much of this could be supplied from Puerto Rico's forests if they were rehabilitated and properly managed. Not only would this reduce the timber bill for the island, but it would also provide needed work for many of its people. It is entirely possible that through intensive management, Puerto Rico's forests can produce an exportable surplus of such valuable wood as mahogany, Spanish cedar, satin wood, and laurel sabino. The wood-using industries could be revived and the island could become largely self-supporting with regard to wood requirements if the idle lands suited only to forest production were put under intensive management. Even the limited practice of forestry on the island will result in tremendous and lasting benefits, both economically and socially, and all expansion of such activity will increase these benefits.

In Puerto Rico the most acute stream-flow and erosion problems exist on land now classed as agricultural. Largely because of removal of fertile topsoil, the productivity of this land was reduced below the point at which it could be used profitably for crop production. Under present cropping methods, erosion is the usual condition, and unless these practices are remedied, more and more of the fertile soil will be added to the silt load of the streams and rivers. These conditions are, in part, the result of cultivation on slopes so steep and soil so easily worn away that destructive washing was inevitable.



Caribbean National Forest



Guaraguao, a member of the mahogany family.

Since private ownership does not meet watershed requirements on these lands even while they have agricultural value, obviously, it cannot be expected that private owners will assume the expense of rehabilitating any part of the lands or of controlling erosion and stream flow. The acreage of forest land in Puerto Rico must be greatly increased if watershed values are to be preserved. The rapid expansion of rural electrification made possible by the Puerto Rico Reconstruction Administration must depend on protected watersheds and any expansion of hydroelectric plants will require expansion of Government-owned forests.

Development of the Caribbean National Forest is being conducted according to the Forest Service policy of multiple use. The principal objective is to restore the forest land now in Federal ownership to a productive condition and to provide leadership in efficient forest management methods for owners of lands better suited to growing timber than other agricultural products. This policy will result in making Puerto Rico more nearly self-sustaining with regard to its timber needs and will improve the economic condition of the island populace by stimulating industry. Forestry practices are being tried, planting methods developed, and the adaptation of more useful species studied. As soon as practicable the Forest Service desires to establish a tropical forest experiment station on the island to meet the need for basic information concerning tree growth, species, and the influence of climatic factors. In addition to preserving and restoring timber resources, protection will be given all wildlife, and areas better suited to recreational use than to timber growing will be developed as playgrounds not only for the people of the island, but as points of interest for visitors from the mainland.

Three forest-tree nurseries, with a combined production of over 2,000,000 seedlings annually, are maintained at Rio Piedras, San German, and Utuado, respectively. As interest in reforestation developed on the island, an active demand for forest planting stock arose which soon exceeded the supply. Private landowners and managers of sugar corporations realized that idle acres could be made profitable by tree planting. Ventures in forestry were possible to the farmer if he could secure the proper seedlings. The proper machinery was set in motion, and since 1926 the production and distribution of nursery stock for farm planting in Puerto Rico has been authorized under the Clarke-McNary law. Consequently, tree planting on all private lands has substantially increased.

The value of recreational developments in the Maricao Forest has not been overlooked. Adequate roads have been constructed and recreational areas which include a swimming pool and picnic facilities have been developed. From certain points there are scenic panoramas of the western half of the island that cannot be adequately described.

The Rio Piedras arboretum, established in 1929, will always have a place in the insular and Federal program because of the contribution which it makes to the solution of various fundamental problems. Here species from all the tropical countries of the world are being grown and scientific data recorded. Another large arboretum is being developed at a site about 2,450 feet above sea level, where altitudinal and adaptability effects on tree growth may be studied. Already experiments are being

conducted with cinchona that have produced results which may lead to quinine production on a large scale.

INSULAR FORESTS ROUND OUT WORK

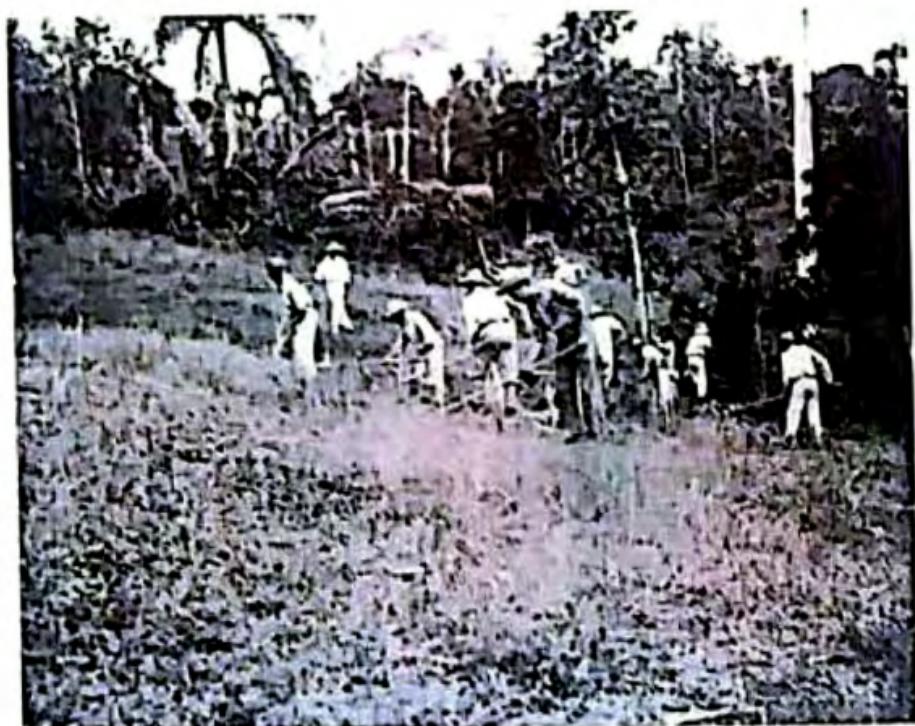
The insular government has developed a system of insular forests which supplements the Federal Forest Service and is closely allied with it. In fact, the supervisor of the Caribbean National Forest is also head of the insular forest service. This arrangement insures the coordination of forest conservation on the entire island for the best interests of the population. The Puerto Rico Forest Service administers the Maricao and Yauco-Guanica insular forests and several other smaller ones totaling about 25,600 acres. The insular mangrove forests along the coast are handled on a short rotation for the production of wood to make charcoal and to provide fence posts.

The Maricao Forest is a mountain area which had been largely denuded before it came into possession of the insular service. An intensive program has been inaugurated on this forest, and extensive experiments are being conducted in growing mahogany and other valuable species. Though not native to the island, mahogany grows rapidly in some localities. Development of the Maricao has gone forward amazingly with the aid of Civilian Conservation labor and emergency funds provided through the Puerto Rico Reconstruction Administration. Not only will the insular forests soon yield a substantial income, but they are becoming examples of good forest practice for owners of private timberlands.

EXPANSION UNDER THE C. C. C.

For many years after its creation, little was done by the Federal Government with the original Luquillo National Forest except to protect its timber against theft. Funds were not available for sufficient development to influence greatly the forestry situation in the island. With the coming of the Civilian Conservation Corps, however, and the availability of emergency funds, the Federal Government, through the Forest Service, has taken a real interest in the development and expansion of this national forest as a contribution to the economic development of Puerto Rico.

In May 1933, President Roosevelt authorized for Puerto Rico a C. C. C. quota of 1,200 men to work on Federal and insular forest projects. This number was later increased to 2,400. The C. C. C. has been of great benefit not only to the forestry movement, but in providing gainful employment for island residents. The responsibility for the execution of the



C. C. C. enrollees preparing land for planting.

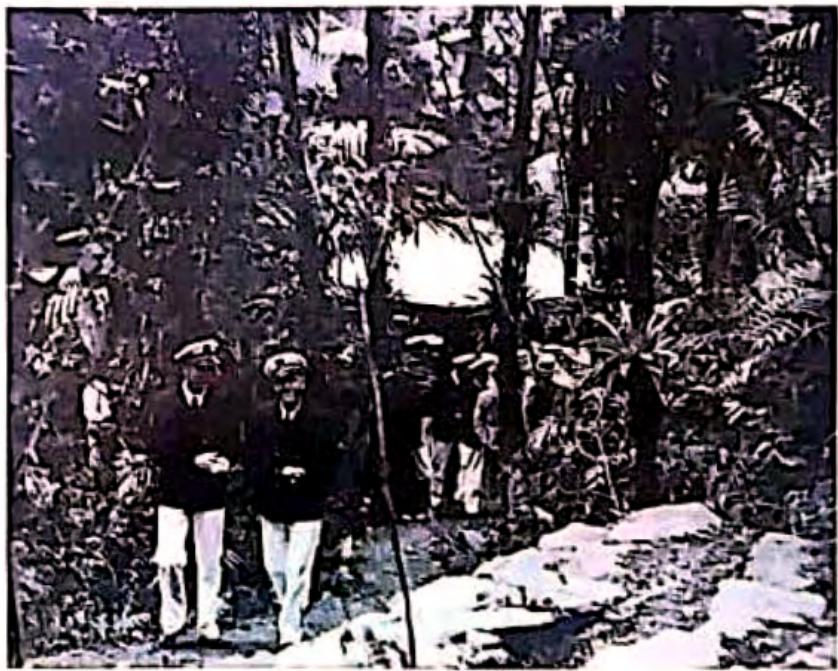
C. C. C. program in Puerto Rico has rested largely with the Federal Forest Service, which not only plans and executes the work projects but also feeds and houses the men in camps similar to those operated by the Army in continental United States.

With the initiation of the C. C. C. program, long cherished plans for the island's national forest began to take form and today a carefully prepared program of road construction, trail building, reforestation, and recreational development is being advanced.

Recently a Federal allotment has been made available for forestry in Puerto Rico under the direction of the Puerto Rico Reconstruction Administration. This administration immediately initiated a comprehensive forestry plan for the island. One of the first steps is the extensive purchase of lands which will be reforested.

GREAT PUBLIC PLAYGROUNDS

Puerto Rico's mountains offer unusual and outstanding opportunities for recreational developments because of the relief they afford to the thousands of people who live at the lower elevations along the seacoast where the



A picnic shelter built by the C. C. C.

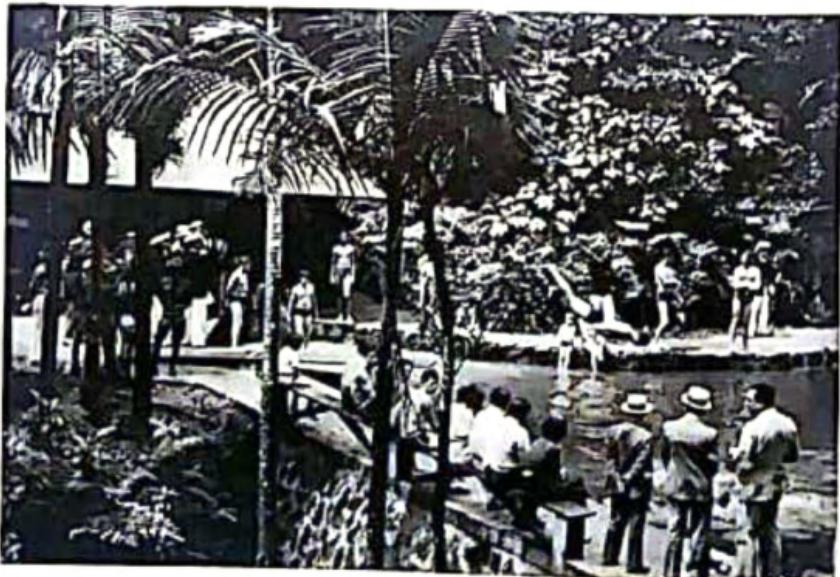
climate is warm and humid, and because of the appeal they have for tourists interested in the American West Indies. Puerto Rico has as much to offer American travelers as any of the foreign possessions that lie in the Caribbean Sea, with the added interest that it flies the American flag.

The principal opportunities for recreational use exist in the Caribbean Forest. In accordance with the policy of the Forest Service to put national forest land to the use which yields the maximum public service, some recreational areas have been developed and others are planned. The most important so far is La Mina recreation area at the base of El Yunque, 3,496 feet high. This is one of Puerto Rico's most interesting peaks. Here, according to legend, the good and evil spirits, "Yokiyo" and "Juracan", reigned from their mighty thrones and protected the Indians. Here, the Spaniards, centuries ago, penetrated the impregnable jungle in search of gold. Today huge pits in the earth tell the story of their disappointment. This playground, where 1,000 visitors a day is not unusual, was developed with C. C. C. labor and is serving as a pattern for similar projects on other parts of the forest.

La Mina represents the larger type of recreational area developed by the Forest Service. It includes ample picnic shelters, swimming pools with shallow wading places for children, diving boards, and dressing room facilities, fireplaces, and a community building with a tile floor that may be used for dancing. There are also a number of summer home sites which may be leased at reasonable rates for erection of cottages by private individuals. Excellent drinking water and sanitary facilities conforming with public-health standards are provided.

From an observation tower on El Yunque the eastern half of Puerto Rico spreads far below and across the water it is possible to see the Virgin Islands. On a clear day the British Island of Tortola, 80 miles away, is also visible. At night one may count the lights of 17 towns and cities. For the use of mountain climbers and hiking parties, free of charge, overnight shelters have been constructed near the summits of El Yunque and El Toro. Permission to use these may be obtained from the forest supervisor at Rio Piedras. Visitors are urged to keep the area clean, but the Caribbean Forest is probably the only national forest in the system where it is unnecessary to post fire warnings. So great is the rainfall that the real difficulty is starting a fire, not extinguishing it.

Recreational developments in the Toro Negro unit provide opportunities for healthful outdoor activities by the people of Ponce, Arecibo, and other



A swimming pool built by the Forest Service.

coastal cities. A small area, accessible to the people of Ponce, has been developed on the headwaters of Dona Juana Creek. There are picnic grounds, a swimming pool, a beautiful forest trail to an observation tower on a nearby peak, and a section devoted exclusively to summer home sites. This recreational area enjoys an altitude of approximately 3,000 feet and is reached by a hard-surfaced road from Juana Diaz and Villalba on the south side and from Ciales on the north. Here the Forest Service has established a nursery to raise trees for planting on the Toro Negro Unit, and also to establish test plantations of such valuable exotic species as cinchona.

These developments are playing an important part in the social and economic life of the island, taxed with the support of a dense population, two-thirds of which lives within 20 miles of both the Luquillo and Toro Negro Units. Catering to travelers is an important part of the industrial life of the island, and the expansion and development of the national forest will play an increasingly important role in the future of Puerto Rico.

ROADS AND TRAILS OPEN TO THE PUBLIC

The road and trail system necessary for the proper protection and development of the Caribbean Forest has been greatly expanded with the aid of C. C. C. labor. While these roads and trails are intended primarily to facilitate the work of administering the forest, they are open to the



The beach at San Juan.

public and offer some of the best opportunities for enjoying the scenic beauty of Puerto Rico. The Mameyes-Rio Blanco Road in the Luquillo Unit, a highway of great scenic charm which runs north from Rio Blanco and joins the insular road at Mameyes, 28 miles from San Juan, is one of the most important. It is about 24 miles long and crosses the Rio Blanco Ridge at an elevation of 2,530 feet. This road opens up the ruggedly beautiful wilderness of the Luquillo Mountains, heretofore little known even to nearby residents, and offers one of the most popular tours on the island.

Passing out of the sugarcane lands and through the rolling section of pasture and coffee plantations, the Mameyes-Rio Blanco Road climbs the range to reveal magnificent vistas of mountains and sea. Then it winds into the depths of the luxuriant tropical forest, passes high cliffs, singing streams, and misty waterfalls, traverses the La Mina recreational area, and passes around the projecting ridges of the mountains to the crest. Here it swings south down the ridges and valleys, affording fine views of the Caribbean Sea, and finally joins the insular highway system at Rio Blanco. The complete tour over surfaced roads from San Juan is about 85 miles in length. Along the way one may visit the picturesque towns of Rio Piedras, headquarters for the Forest Service in Puerto Rico, Carolina, Rio Grande, Mameyes, Rio Blanco, Juncos, Gurabo, and Caguas.

Hikers and horseback riders will find 25 miles of trails that lead into the most ruggedly beautiful mountain country in Puerto Rico. Four high mountain peaks have been made accessible, and the wild beauty of



A Puerto Rican pig goes to market.

a number of deep gorges has been discovered. One trail penetrates the heart of the unique mossy dwarf forest; others pass through stands of virgin trees and lead to waterfalls of great height and beauty. Along the trails are many of the stately, white-barked trees, called by the Indians "tabonuco", which exude a substance used by the natives in making candles. There is also the ausubo, which provides heavy wood of maroon color. Beams and rafters in Spanish buildings constructed two centuries ago and still standing were carved from the ausubo. It is one of the most important commercial trees on the island. The laurel sabino, endemic to the Luquillo section and related botanically to the magnolias of Southern United States, is very beautiful with its magnificent branches and large conspicuous blossoms.

WILDLIFE GIVEN PROTECTION

Under the program of development which the Forest Service follows in administering its lands, the problem of preserving wildlife values is one of importance. In many instances fish and game were greatly depleted on forest lands when they came into possession of the Government. The first job is to restore these resources by protection and restocking.

The wildlife resources of the Caribbean Forest are uniquely interesting. Thrushes, finches, cuckoos, and parrots inhabit the Luquillo Unit and make it beautiful with their songs and color, while humming birds, sometimes in noisy squadrons, fill the air with their characteristic buzzing as they dart about the forest.

A most interesting experiment has been undertaken by the Forest Service in cooperation with the Federal Bureau of Fisheries and insular authorities in the introduction of rainbow trout in several of the swift mountain streams in the Federal and insular forests. Although it is still too early to announce the ultimate success of this experiment and to allow the fisherman to get out his rod and fly, indications are that within a few years the national and insular forests will afford good trout fishing.

LIVING PLEASANT IN PUERTO RICO

Transportation on the island and to and from Puerto Rico is frequent, convenient, and efficient. The Puerto Rico Line maintains a swift weekly express steamer service to and from New York, while the Bull Insular and the Red D Lines have passenger and freight steamers making weekly trips to and from Puerto Rico. The Bull Insular Line maintains a passenger and freight service from Philadelphia, Norfolk, and Baltimore.



One of the recreational improvements in the Lasalle unit

From the Gulf ports the Waterman Line covers the Tampa, Mobile, and New Orleans area in a 10-day passenger and freight service. The Puerto Rico Line and the Lykes Line maintain service to New York and Gulf ports. Americans making these trips are not required to have passports.

Air-minded travelers will find the regular network of airlines of the Pan American Airways giving good service, and there is a triweekly service between Miami and Puerto Rico. The Sikorsky planes of the Pan American make the distance between the island and Miami in 12 hours.

On the island there are all modern types of transportation. San Juan has an electric trolley system and excellent bus service. The American Railroad Company lines practically encircle the island, which also enjoys a network of splendid hard-surfaced roads, many of exceptional scenic quality. Several of them cross mountains at elevations of more than 3,000 feet and others follow the picturesque coast line in and out of extensive coconut groves.

In Puerto Rico all sports may be indulged in the entire year around. Golf, tennis, swimming, sailing, fishing, and horse racing are always in season, and sea bathing may be enjoyed every month in the year. Good hotels, clubs, restaurants, and gay resorts make visitors comfortable at reasonable rates. Puerto Rico offers excellent opportunities to those seeking relaxation in a setting that is different from the usual concentration points on the mainland.



A Puerto Rican farmer "tonghen" his fighting cocks in the sun

Years of close association and the sharing of national citizenship have cemented the relationships of the island community and the mainland. In Puerto Rico the visitor from the United States is in his own home and the people of the island stand ready to extend a sincere welcome.



Forest Service headquarters at Rio Piedras.

ADMINISTRATION

The Caribbean National Forest is administered by the Forest Service, a bureau of the United States Department of Agriculture. The forest supervisor in charge maintains headquarters at Rio Piedras. Anyone who desires information about the Caribbean National Forest or the insular forest service may obtain it by writing to the forest supervisor, Caribbean National Forest, Rio Piedras, Puerto Rico.

FUTURE DEVELOPMENTS

Although a vast amount of work has been accomplished by the United States and insular forest services in laying the background for intensive forestry in Puerto Rico, much remains to be done. With the Civilian Conservation Corps and Puerto Rico Reconstruction Administration to aid the development program, the Caribbean National Forest and the insular forests will continue to become more important in the economic life of the island.

The forest units will be important in the protection of watersheds, the production of timber, and the scientific study of tropical trees and plant species. Recreational use is daily increasing. In the Luquillo Unit the valley of Rio Bano de Oro will be preserved forever as a primitive area through which no transportation routes will be constructed and where none of the processes of Nature will be disturbed.

The Toro Negro Unit, along the main crest of the Cordillera Central, has been denuded of trees except for scattered patches in inaccessible places, and a long-range program of reforestation will be necessary to return this land to its maximum usefulness. Here several south-flowing streams originate that furnish power and irrigation water for the intensively cultivated sugar lands on the dry, south plains. Reforestation for the protection of the headwaters of these rivers will pay important dividends in control of run-off, in preventing floods, and in checking erosion.

Scientific timber management will insure a steady supply of wood for charcoal, fence posts, building material, and other forest products urgently needed in Puerto Rico. Activities stimulated by the existence of the forest will provide steady employment for increasing numbers of men. In short, the stabilizing influence of this important national forest destines the Caribbean for a leading part in the reconstruction of Puerto Rico and the rehabilitation of its population.

